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Abstract: Structural priming is a useful tool for investigating linguistics representations. We argue that structural priming can be extended to the investigation of pragmatic representations such as Gricean enrichments. That is not to say priming is without its limitations, however. Interpreting a failure to observe priming may not be as simple as Branigan & Pickering (B&P) imply.

We agree with Branigan & Pickering's (B&P's) central thesis: Structural priming is a good methodological candidate for investigating linguistic representations. Structural priming, however, can be used to investigate representations used in pragmatics, as well as in semantics and syntax.

Bott and Chemla (2016) and Rees and Bott (2015; 2016) find that scalar implicatures – the prototypical pragmatic enrichment can be primed. For example, Bott and Chemla showed that sentences with enriched interpretations of *some* (*some* → *some but not all*) prime higher rates of enrichment in subsequent target sentences than sentences with basic *some* (where *some* takes its literal meaning; i.e., *some and possibly all*). These results suggest that another layer of representation could be added to Figure 1 in B&P, with corresponding links to the lexicon. The representations involved would be at the sentence level, (S & not[S']), where S refers to the basic, unenriched sentence, and S' to the informationally stronger sentence (a sentence involving a stronger expression, e.g., *all* in the case of *some*). Evidence that such a representation was independent of lexical material was given by the demonstration that sentences with implicatures associated with one expression, for example, *some*, could prime implicatures associated with another – for example, the numbers (from *at least N* to exactly *N*), and evidence of links to the lexicon was shown by a lexical boost to the priming effect (*some* → *some* generated more priming than *some* → *numbers*). Finally, evidence that the priming effect was independent of the processes accessing the representations was provided by Rees and Bott (2016), who showed that production of implicatures could be primed by comprehension.

Why should these results demonstrate a separate level of representation, as distinct from the semantic level of B&P? The distinction between semantics and pragmatics is fuzzy in the case of scalar implicatures (see so-called Grammatical Theories of scalar implicature, e.g., Chierchia [2013]). There are at least two differences

between the representations described above and those included in Figure 1. The first is that representations used to generate scalar implicatures must take *alternatives* as part of their input – that is, sentences that the speaker could have said but didn't, for example, sentences involving *all* instead of *some*, as Grice (1975) and many others have argued. Correspondingly, Rees and Bott (2015) showed that sentences involving the alternative prime enrichment just as much as sentences involving the enriched scalar expression, and more than sentences involving the unenriched scalar expression. This type of input, and corresponding priming effects, do not apply to the semantic representations described by B&P. The second difference is that implicature representations are applied optionally (or defeasible), as in the standard Gricean model, for example, in the case of comprehension, application of the implicature representation would be blocked if the speaker is not judged to have had sufficient knowledge to have uttered the stronger expression. The sorts of representations discussed by B&P are not optional in the same sense. Overall, then, while the use of structural priming so far has been used primarily to discover syntactic representations, it also can provide useful insight into how pragmatics can be integrated into a representational language system.

In the remainder of the commentary, we make two methodological comments on structural priming. The first is that structural priming provides causal information about similarities in representations, whereas many traditional linguistic techniques, such as analysis of corpora, provide only correlational information. Bott and Chemla (2016) illustrate this. They tested whether expressions that are uncontroversially enriched using Gricean mechanisms share derivation properties with other, more debatable implicature

enriched meanings. They showed that enriched *some* primes enriched numbers but not enriched plural morphology (+s). Consequently, they argued that *some* enrichment and the numbers shared a common derivation mechanism that was at least partially separate from the mechanism used to derive plural enrichment. Previous work addressing this question investigated the similarities in the enrichment distributions across expressions and context. For example, Horn (1972) observed that the numbers have an enriched meaning (*exactly N*) in the same contexts as *some* has an enriched meaning (*some but not all*), while Breheny (2008) and others found differences in the distributions. Distributional analyses, however, require considering examples *in situ*, complete with linguistic material that may or may not be relevant. Conversely, in structural priming, the potentially redundant material can be stripped away (or even investigated, as in the case of the lexical boost). The causal inferences that arise from structural priming make it a particularly powerful technique for discovering overlapping mechanisms and representations across linguistic phenomena.

The second point relates to the inferences that can be drawn in the absence of a priming effect. When two sentences that are hypothesized to use overlapping representations fail to prime each other, does this mean that the hypothesized representations are inaccessible (i.e., non-existent)? For example, if Bott and Chemla (2016) had failed to find that enriched *some* and numbers primed each other, would this constitute evidence that there are no abstract scalar implicature representations? B&P do not directly address the issue, but they imply that representations are accessible only if they can be primed (sect. 1.4). While it is true that many representations are primable

(i.e., they remain active across time), we do not feel that, to be accessible, representations necessarily must be primable. Primability confers many advantages, including the facilitation of alignment and prediction in dialogue (Pickering & Garrod 2004, 2014). For some representations, however, these factors may not be important. Such representations would clearly not be detectible using structural priming methodology but might be accessible using other techniques. Therefore, a failure to observe a priming effect is an ambiguous result: Either the representation is not accessible, or it is not primeable. This is problematic, because a weakness in the alternative hypothesis makes null structural priming effects difficult to interpret and positive findings less persuasive (e.g., a "file drawer" effect is more likely when publication of a null effect is difficult).

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